THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte DAMODAR M. PAI,
WILLIAM W. LIMBURG,
JOHN F. YANUS,
and PAUL J. DE FEO

_____

Appeal No. 95-3947
Application 07/812,530[1]

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ON BRIEF

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Before GARRIS, WARREN and OWENS, *Administrative Patent Judges*.

OWENS, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the examiner's final rejection of claims 1, 4, 5, 8-10, 13, 14, 17 and 18. Claims 19-36, which are the only other claims remaining in the application, stand withdrawn from consideration by the examiner as being directed toward a nonelected invention.

THE INVENTION

[1] Application for patent filed December 20, 1991.

Appellants claim a multilayer photoreceptor and state that it is for use in electrophotographic imaging members (specification, page 1, lines 6-8). The photoreceptor includes a support layer, a charge generating layer on the support layer, and a specified charge transport dual layer on the charge generating layer. The charge transport dual layer, which appellants also claim separately, includes a first transport layer and a thinner second transport layer deposited on the first transport layer. Each transport layer comprises a charge transporting polymer which contains charge transporting segments and inactive segments and includes a polymeric arylamine compound. The charge transporting segments of the first charge transporting polymer are about 30 to about 90 wt% of the total polymer, and those of the second charge transporting polymer are about 5 to about 30 wt% of the total polymer. Appellants state that the charge transporting segments are the segments which tend to get oxidized in the corona atmosphere of an electrophotographic imaging device, and that by reducing the concentration of these segments and increasing the concentration of more stable inactive segments in the second, or top, transport layer, the top layer is less prone to degradation yet is effective for leaking charges to the surface (specification, page 10, lines 10-22). Appellants' claim 10, which is the broadest claim and is directed toward the charge transport dual layer itself, is appended to this decision.

THE REFERENCES

Champ et al. (Champ)	4,889,784	Dec. 26, 1989
Yanus et al. (Yanus '687)	5,028,687	Jul. 2, 1991
Yanus et al. (Yanus '512)	5,262,512	Nov. 16, 1993

THE REJECTIONS

Claims 1, 4, 8-10, 13, 14, 17 and 18 stand rejected under 35 U.S.C. § 103 as being unpatentable over Champ in view of Yanus '687. Claim 5 stands rejected under 35 U.S.C. § 103 as being unpatentable over these references, further in view of Yanus '512.[2,3]

OPINION

We have carefully considered all of the arguments advanced by appellants and the examiner and agree with appellants that the aforementioned rejections are not well founded. Accordingly, these rejections will be reversed.

Champ discloses an organic photoconductor which has improved wear resistance without degradation in photographic properties (col. 1, lines 8-10). The improved wear resistance is obtained, in one embodiment, by using two charge transport layers, wherein the top or outer layer has a lower concentration of arylamine charge transport material, and a higher concentration of

[2] The examiner has withdrawn the rejection of claims 1, 4, 5, 8-10, 13, 14, 17 and 18 under 35 U.S.C. § 103 over Yanus '687 in view of Champ and U.S. 5,034,295 to Allen et al. (answer, page 3).

[3] The examiner states that since claim 14 is a duplicate of claim 13, claim 14 will be rejected under 35 U.S.C. § 101 if claim 13 is found allowable (answer, page 3). No rejection under 35 U.S.C. § 101 is before us for consideration.

polymeric binder, than the bottom layer (col. 1, lines 46-67; col. 2, lines 3-26). The concentration of charge transport material in the bottom layer can be up to 80%, preferably 30-80% (col. 2, lines 26-28). The top layer is relatively lean in charge transport material, and need contain none at all (col. 1, lines 65-67; col. 2, lines 28-29). In an example, the bottom layer is about three times as thick as the top layer (col. 2, lines 42-44).

Yanus '687 teaches that when a charge transport layer comprised of activating small molecules such as arylamines in a polymeric binder is used with liquid development systems, leaching out the activating small molecules results in crystallization of the activating small molecules and increases the susceptibility of the transport layer to solvent/stress cracking during periods of nonuse (col. 2, lines 22-52). The Yanus '687 invention is a photographic imaging member which has greater resistance to component leaching, cracking, crazing, softening, swelling and abrasion, and which comprises a substrate, a charge blocking layer, a charge generating layer and a charge transport layer, wherein at least the charge generating layer or charge transport layer includes a polymeric arylamine compound selected from a specified genus (col. 5, line 1 - col. 10, line 65). Appellants state that their polymeric arylamine compound preferably is a compound as disclosed in a number of U.S. patents, one of which is Yanus '687 (specification, page 12, lines 7-12). Yanus '687 does not disclose use of a charge transport dual layer as recited in appellants' claims.

The examiner argues that it would have been obvious to one of ordinary skill in the art to substitute the Yanus '687 polymeric arylamine for Champ's arylamine in order to obtain the greater resistance to cracking, crazing, leaching, crystallization, abrasion, softening and swelling disclosed by Yanus '687 (answer, page 6).

The examiner's argument is deficient because the examiner has not established that the combined teachings of Champ and Yanus '687 would have motivated one of ordinary skill in the art to use two charge transporting layers each of which contains the relative amounts of charge transporting segments and inactive segments recited in appellants' claims. Champ uses relatively little arylamine in his outer layer because the wear resistance of the charge transport layer increases as the ratio of arylamine to binder is decreased. Yanus '687, however, states that one of the characteristics of the Yanus '687 charge transport layer is resistance to abrasion when exposed to blade cleaning (col. 5, lines 22-25). There is no indication in Yanus '687 that decreasing amount of arylamine groups in the charge transport layer would increase the wear resistance of that layer. Thus, the disclosure by Yanus '687 would not have provided one of ordinary skill in the art, who was interested in wear resistance, with motivation to use two charge

transport layers wherein the outer layer contains less arylamine groups than the bottom layer. Appellants' claims encompass use of about 30 wt% of charge transporting segments in both of the charge transport layers. However, the examiner has not established, and it is not apparent, why the applied references would have led one of ordinary skill in the art to use two layers wherein each of the layers contains about 30 wt% charge transporting segments. Champ uses two charge transport layers only because an outer layer which contains little or no arylamine is needed to provide increased wear resistance. There is no indication in Champ and Yanus '687 that if the Yanus '687 abrasion resistant material (col. 5, lines 22-25) were used instead of Champ's arylamine/polymeric binder material, there would be a reason for using two charge transport layers.

As for the rejection of dependent claim 5, the examiner relies upon Yanus '512 for a teaching of use of a bisphenol A reactant (answer, pages 6-7). The Yanus '512 disclosure otherwise is similar to that of Yanus '687, and does not remedy the deficiencies in Champ and Yanus '687 regarding the rejection of the independent claims as discussed above.

For the above reasons, we conclude that the examiner has not carried his burden of establishing a *prima facie* case of obviousness of appellants' claimed invention.

DECISION

The rejections under 35 U.S.C. § 103 of claims 1, 4, 8-10, 13, 14, 17 and 18 over Champ in view of Yanus '687, and of claim 5 over these references, further in view of Yanus '512, are reversed.

REVERSED

BRADLEY R. GARRIS Administrative Patent Judge	)
CHARLES F. WARREN Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
TERRY J. OWENS Administrative Patent Judge	)

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APPENDIX

10. A charge transport dual layer comprising:

a first transport layer comprising a first charge-transporting polymer including charge transporting segments and inactive segments, wherein the first charge-transporting polymer comprises a polymeric arylamine compound; and

a second transport layer deposited on the first transport layer, the second transport layer comprising a second charge-transporting polymer including charge transporting segments and inactive segments, wherein the second charge-transporting polymer comprises a polymeric arylamine compound;

wherein the weight percent of charge transporting segments in the first charge transporting polymer is in the range from about 30 to about 90 weight percent of the total polymer weight and wherein the weight percent of charge transporting segments in the second charge transporting polymer is in the range from 5 to about 30 weight percent of the total polymer weight; and

wherein the second transport layer is thinner than the first transport layer.